Notes on the American Oribatid Fauna, with a List of Four Species of European Oribatidae Hitherto Unknown in This Country.

By H. E. Ewing, Urbana, Ill.

The oribatid fauna of North America in general appears to be distinct from that of Europe. Mr. Banks in his catalogue of the Acarina of the United States (Proc. U. S. Nat. Mus. Vol. XXXII, pp. 595-625) gives a list of eighty-four species known in this country and according to this author they are all peculiar to America. In the course of about three years collecting, being assisted by several other persons, I have found four species in this country which I give here below that are well known European forms, one of which is remarkable in being saltatorial.

Notaspis bipilis Herm., Mém. apt., p. 95.

In moss. Collected by L. M. Smith at Parker, Ill., and by the writer at Arcola, Ill. Several specimens.

Zetorchestes micronychus (Berl. and Can.), Berl. Acar. Myr. Scor. fasc. 4.

In trash. Collected by means of a Berlese funnel by C. R. Crosby at Columbia, Mo.

Hermannia bistriata (Nic.) Arch. Mus. Paris, Vol. vii, p. 397.

Under logs, in moss and in trash. Collected by C. R. Crosby at Columbia, Mo., by J. Douglass Hood at Urbana, Ill., and by the writer at Arcola, Ill.

Tegeocranus velatus Michael, Jour. Royal Mic. Soc., Vol. iii, p. 189

In moss. Collected by the writer at Muncie, Ill.

The first of these species, *Notaspis bipilis* Herm., is closely related to *Oppia spinipes* Banks and *Oppia montana* Banks, but the author has compared the specimens with a named specimen sent him by Mr. A. D. Michael and finds that they agree in every respect with *N. bipilis* Herm. This species has a wide distribution having been found before now in many places in Europe, in Siberia and in the arctics. Its habitat is exclusively in moss.

The second species, *Zetorchestes micronychus* (Berl. & Can.) is very remarkable in that the last pair of legs are enlarged and fitted for jumping. This is the only known oribatid which has that power, which is made possible by the peculiar structure of the fourth pair of legs and the large and powerful abdominal muscles. Already this species has been recorded from Italy, Switzerland and Algeria; the authors' record making it known to three continents. I have but a single specimen of this species sent me by Mr. Crosby but it is well preserved and agrees excellently with Canestrini's and with Michael's figures, and since so many parts of its structure are so characteristic I feel confident of the determination.

The third species, *Hermannia bistriata* (Nic.) appears to be quite common in central Illinois and at Columbia, Mo., as I have dozens of specimens from both these places. This species has a general distribution in Europe. According to Michael the imago is terrestrial, on moss, while the nymph is amphibious on land moss or Sphagnum. I have found the adults quite common under old logs, as well as in moss.

The fourth species, *Tegeocranus velatus* Michael, has only been found in England before now, where it lives in moss. This is the situation in which the author has found it.

Mr. A. D. Michael in 1898 (Das Tierreich, Lief. 3., Oribatidae), reviews the Oribatidae, giving a list of 198 known, good species. Since that time fully one-half as many more have been added making the total number of known Oribatidae now near 300 species. Of the 198 species described by Mr. Michael, 160 are known in Europe where the Oribatidae, as well as the other Acarina, have been much better worked up than in the rest of the world. Up to the present time the writer has in his collection 93 species of Oribatidae, the most of which have been collected in Illinois, Indiana and Missouri. Judging from the great number of species met with in this area I would infer that the total number of North American species must be at least somewhere in the neighborhood of 300.

It is a remarkable fact that while over 90 per cent. of the species found in this country are new, yet only two genera are peculiar to this country. The American fauna differs from that of the old world also in the much greater percentage of smooth species. In this country at least 70 per cent. of the species have a smooth, shiny integument, while in the old world the numbers of smooth and of rough or sculptured species are almost equal. The causes for this difference are not known. Here are some suggestions which may possibly account for such an apparent difference in the faunae of the two continents.

1.—That the shiny species are much more easily seen because of their reflection of light from the surface of the integument, and that a more complete search in this country will reveal many more rough species here.

2.—That there is something peculiar or favorable in our climate or in the vegetation upon which the mites feed that causes a larger percentage of smooth species.

3.—That most of the shiny species were originally indigenous to this country and that most of the species that there are in Europe of this kind have been largely introduced from America, where the shiny species, or some of the most important genera including these species, have had a long continued history and consequently a greater chance for the production of new species.

In regard to the first factor there is but little doubt but that it plays an important part in the apparent difference of our fauna from that of Europe. I have found that in the case of my collection that it was over a year before I discovered a single rough species. Since that time a careful watch and search has revealed nearly two dozen of these.

In regard to the second cause, little is known as present due to our unfamiliarity with their food habits.

The third mentioned cause has some evidence in its support for it is true that the increased percentage of smooth species in this country is largely due to the large number of the abdominal-winged forms here, which already number over 40 species.

It may be added in closing that the rough species, as those of the genera *Nothrus, Neoliodes,* etc., are very sluggish in their movements and for this reason are not noticed as quickly as the more active, shiny ones. Further records will doubtless soon settle some of these interesting questions.

Ticks on the California Ground Squirrel.

By Wm. B. Wherry and F. Creighton Wellman,

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The important role played by a California ground squirrel (*Otospermophilus beecheyi*) in the epidemiology of plague in the United States makes a study of its parasites of particular interest. During June, July and August we found these rodents to be heavily infested with ticks which occurred in greatest numbers about the neck and ears. Specimens were sent to Mr. Nathan Banks who has kindly given us the following preliminary report: "There were two species of ticks; one specimen is a common species in California known from many hosts—*Dermacentor occidentalis* Neum.; the other specimens represent a new species of Ixodes, which I shall describe as *Ixodes aequalis.* It is related to the *I. augustus* of Washington and Alaska, but has a larger and shorter shield, and minor differences."

The Entomological Society of America will meet in Boston on Thursday and Friday, December 30th and 31st. The members and visiting entomologists will be the guests of the Cambridge Entomological Club at a smoker. There will also be a special exhibit covering all branches of entomology. More particulars of the meeting will be given later. All entomologists should make it a point to attend.

The twenty-second annual meeting of the American Association of Economic Entomologists will be held in Boston, on Tuesday and Wednesday, December 28th and 29th. This promises to be a very large meeting. The president this year is Dr. W. E. Britton, of Connecticut, who will preside.